Title: Interdisciplinary Advances in Artificial Intelligence and Machine Learning (AIML) in Healthcare and Biomedical Engineering

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PROPOSAL

1. Introduction and Rationale:

Artificial Intelligence (AI) and Machine Learning (ML) are increasingly redefining the landscape of healthcare and biomedical sciences. From advanced diagnostic systems and predictive analytics to novel biomedical materials and personalized treatment strategies, AI/ML approaches are accelerating innovation, improving accuracy, and enhancing decision-making processes across disciplines. In healthcare, AI/ML techniques have demonstrated remarkable potential in early disease detection, patient monitoring, medical imaging, drug discovery, and clinical decision support systems. Similarly, in biomedical materials science, computational intelligence is driving breakthroughs in polymer design, biomaterials development, tissue engineering, and nanomedicine applications. These interdisciplinary intersections not only foster translational research but also create pathways for practical applications in pediatrics, nutrition, public health, and materials-based therapeutic innovations. Given the growing importance of AI/ML-driven research, this special issue aims to provide a consolidated platform for showcasing novel contributions that bridge healthcare, biostatistics, biomedical materials, and applied AI/ML methodologies.

2. Scope of the Special Issue:

This special issue will bring together interdisciplinary research at the nexus of medical research and biostatistics:

- Statistical modeling and ML algorithms for clinical data analysis.
- AI-enhanced survival analysis, risk prediction, and treatment outcome modeling.
- Integration of big data, bioinformatics, and health informatics with advanced statistical learning.
- Explainable AI in medical decision-making and evidence-based practice
- ML and NLP-based understanding of clinical documentation.
- Patient Record Analysis.
- Appointment Optimization
- AI-enabled patient monitoring systems.
- AI-based interventions for chronic disease management.
- AI tools to improve clinical decision making and diagnostic accuracy.

- Machine learning algorithms for personalized diagnosis.
- AI / ML applications in medical imaging.
- Intelligent virtual assistants for instant medical triage.

3. Potential Impact:

The proposed special issue will:

- Provide a comprehensive, interdisciplinary resource for researchers working at the intersection of healthcare, biostatistics, and biomedical materials.
- Highlight how AI/ML techniques are reshaping clinical practice, statistical medical research, and materials innovation.
- Encourage collaboration between disciplines traditionally siloed, leading to translational outcomes with direct societal and healthcare benefits.
- Serve as a reference point for both academia and industry, inspiring future research and applications.

4. Target Audience:

- Pediatricians, nutrition scientists, and healthcare professionals.
- Statisticians, biostatisticians, and data scientists working with medical datasets.
- Biomedical engineers, polymer scientists, and materials researchers.
- AI/ML researchers interested in interdisciplinary applications.
- Policy makers and practitioners exploring AI-driven healthcare solutions.

Call for Papers: September 1, 2025
Submission Deadline: December 31, 2025